CLAIMS

1. An optical plastic fiber comprising a core region and having a center line along a longitudinal axis of the fiber,

in any plane perpendicular to the center line, a refractive index of the core region increasing along a direction going from a periphery portion to the center line, and

in any plane parallel to the center line and containing the center line, a birefringence index varying along a direction going from the center line to a periphery portion perpendicular to the center line.

2. The optical plastic fiber of claim 1, wherein the core region is formed of a material having a positive intrinsic birefringence; and in any plane parallel to a propagating direction and containing the center line, an absolute value of a birefringence index Δn, $\Delta n=nx-ny>0$, where nx is a refractive index parallel to the longitudinal axis and ny is a refractive index perpendicular to the longitudinal axis, increases along a direction going from the center line to a periphery portion perpendicular to the center line.

3. The optical plastic fiber of claim 1, wherein the core region is formed of a material having a negative intrinsic birefringence; and in any plane parallel to a propagating direction and containing the center line, an absolute value of a birefringence index Δn, $\Delta n=nx-ny<0$, where nx is a refractive index parallel to the longitudinal axis and ny is a refractive index perpendicular to the longitudinal axis, decreases along

a direction going from the center line to a periphery portion perpendicular to the center line.

4. The optical plastic fiber of any one of claims 1 to 3, wherein the core region is formed of a uniform composition.

5. The optical plastic portion of any one of claims 1 to 4, wherein molecules in the core region are aligned along the longitudinal axis and a degree of the alignment varies along a direction going from the center line to a periphery portion perpendicular to the center line.

6. A process for producing an optical plastic fiber comprising drawing a preform comprising at least one region formed of a material having an intrinsic birefringence into fiber while passing the preform through at least two zones where a temperature is set to be different each other, thereby creating a temperature-difference of 5 ℃ or larger between a center portion and a periphery portion of the preform before the preform is drawn into fiber.

AMENDED CLAIMS
[received by the International Bureau on 19 November 2004 (19.11.04);
new claims 7 added; remaining claims unchanged (1 pages)]

a direction going from the center line to a periphery portion perpendicular to the center line.

4. The optical plastic fiber of any one of claims 1 to 3, wherein the core region is formed of a uniform composition.

5. The optical plastic portion of any one of claims 1 to 4, wherein molecules in the core region are aligned along the longitudinal axis and a degree of the alignment varies along a direction going from the center line to a periphery portion perpendicular to the center line.

6. A process for producing an optical plastic fiber comprising drawing a preform comprising at least one region formed of a material having an intrinsic birefringence into fiber while passing the preform through at least two zones where a temperature is set to be different each other, thereby creating a temperature-difference of 5 ℃ or larger between a center portion and a periphery portion of the preform before the preform is drawn into fiber.

7. The optical plastic fiber of any one of claims 1 to 5, wherein light loss is not greater than 250 dB/km.